# A COMPARISON OF ACHIEVEMENT RECORDS OF STRAWBERRY SCHOOL AND WINTER SCHOOL STUDENTS IN POLK COUNTY, FLORIDA

HOWARD EDWIN EAGLESON

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# A COMPARISON OF ACHIEVEMENT RECORDS OF STRAWBERRY SCHOOL AND WINTER SCHOOL STUDENTS IN POLK COUNTY, FLORIDA

HOWARD EDWIN EAGLESON

Submitted in partial fulfillment of
the requirements for the degree of
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Florida Southern College

1949

The undersigned members of the reading committee of Howard Edwin Eagleson have examined his thesis, A Comparison of Achievement Records of Strawberry School and Winter School Students in Polk County, Florida, and recommend its acceptance.

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Chairman of the Graduate
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# CHAPTER I

## INTRODUCTION

The purpose of this study is to compare the achievement records of students who attend a winter school with the records of those who attend a strawberry school. It is proposed to evaluate the achievement records to determine the advisability of operating or discontinuing the operation of schools whose terms are conducted during seasons of the year other than the months September to June.

In an age of standardization and specialization, the objectives of public school education are not only to guide the student into a specialized field, but to make him socially acceptable and politically responsible by means of an education which is the equal of that available to any other group within our country.

It is the duty and endeavor of the school to adjust itself to the environment in which it has been established, and to give to the pupils a broadened vision of what conditions previal in other parts of the world, and in other fields of endeavor, from that to which they are accustomed. Their individuality may be allowed to develop, while at the same time they are kept educatively on a par with pupils in other school systems. In a community which is largely industrial, it is probable that a majority of the students

will become workers in the industry of the area. Their schooling will be influenced by the requirements of that industry, even though the broad background of their education may still be kept within the bounds of a schedule comparable to that in a community wherein the major field of endeavor of the workers may be scientific, or agricultural.

This study is being made, and the results of the comparison will be presented, for use as an aid in the decision as to whether students, forced by statute to attend school for a term of 180 days each year, are seriously handicapped by attending during the hot summer months when the majority of pupils are on vacation.

## Basic Assumptions

It is assumed that the pupils in schools which are in session during the usual term, September to June, accomplish as much as can be reasonably expected in a nine months term. Accomplishment may be measured by use of the accomplishment ratio.

## Hypothesis

If the accomplishment ratio is a reliable measure of accomplishment, and if the accomplishment ratio of the students who attend a school which is in session during an unusual time of the year is comparable to that of the students

who attend a school which is in session during the usual term, September to June, then the continuance of the strawberry school may be justified.

## Historical Background of Problem

In colonial America the long summer vacation seems to have grown out of an agrarian economy in which children were needed to work on the farms during the summer months.[1] Therefore, in the northern areas, where the harvesting season of agricultural crops is in late July and August, schools are not in session during those months. Schools in northern agricultural regions usually operate from sometime in September until the early part of June. The children are then able to aid their parents in the harvesting of the crops.

In contrast, the state of Florida has a humid, subtropical climate, with hot summers and warm winters. The mild winters make lucrative truck farming one of the major industries of the state.[2] The harvesting of these crops is carried on during the mid-winter months.

Previous to 1868 there were no public schools in Florida. Early reports show that the school terms were

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[1] Brubacher, John S., A History of the Problems of Education. New York: McGraw-Hill Co., 1947. P. 229.

[2] Florida Citizens Committee on Education, Education and the Future of Florida. Tallahassee: Florida Citizens Committee on Education, 1947. P. 16.

divided into summer and winter terms.[3] According to these reports, it was the common custom in several northern Florida counties to operate the schools regularly after the first of July and to keep them in session for the few growing months in the summer, after which the schools were closed, in order that the pupils' labor might be used by the parents in picking cotton and harvesting other fall crops.[4]

In recent years, the custom of operating schools during the summer months has grown up in southern Florida. This is especially true in Hillsborough and Polk Counties, where strawberries are grown for the profitable mid-winter northern markets. Some of the public schools are closed during the picking season of January, February, and March, so that the labor of the children may be utilized in the harvesting of the crop. Thus the term "strawberry school" originated.

The question has been raised as to whether pupils, forced by statute to attend school during the hot summer months, accomplish as much as those who attend during the cooler months. In Polk County a movement was begun aimed at discontinuing all strawberry schools and, instead, operating

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[3] Biennial Report of the Supt. of Public Instruction of the State of Florida for 1884. P. 14.

[4] *Ibid* for 1894. P. 260.

them as winter schools. There was resistance to this movement by parents of the children who attend the strawberry schools, and their abolition was tabled indefinitely by the County Board of Public Instruction.

## Contributions of Socio-Economic Values to Incentive and Accomplishment in the Strawberry School

The winter season in Florida, during which time the strawberry school students are on vacation, is the busy time of year for parents of almost all Polk County school pupils. A breakdown of attendance records of Polk County schools proved that in the winter schools attendance was less regular during this season than during other periods of the year.[5] Regular attendance, therefore, is encouraged by scheduling the school term during the slack season.

It is economically necessary, in many families, for both parents to seek seasonal employment in the canning factories and other business establishments, as well as on the farms, in order to support their families. Here, too, the importance of the tourist trade cannot be overlooked. This trade reaches its peak during the three cool winter months, and an opportunity thus exists for the parents who do not

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[5] Nelson, Frank A., _A Comparison of Attendance Records between Regular and Strawberry School Terms in Polk County, Florida_. DeLand: Stetson University, 1948. P. 6.

live on farms to be remuneratively employed.

The children are able to do light work which, directly or indirectly, contributes to the family income. Especially is this true on the farms, where they can help cultivate and harvest crops, especially strawberries, feed the animals and do many light chores. The task of caring for the young children is often given to the older ones, to make it possible for the parents to do outside work.

If it were not for this additional income, many of the children would lack essential clothing and school supplies, and even proper food, which is in part furnished to them at low cost through the school cafeteria. All these factors contribute directly to the success or failure of a child's schooling.

During the busy time of the year, the parents have less time in which to give attention to the children's school problems and needs. Their encouragement and help is thus more readily available to the children during the time of year when citrus and truck farm production and the tourist trade are not at their height.

In addition to more regular school attendance, and the increase in the family income, made possible by the winter vacation time of the strawberry school, some children are able, at this season, to plant and harvest small crops of their own. This is valuable practical experience

for a farm boy or girl, because of the knowledge thus absorbed, even when the monetary remuneration is small. Consideration of all these factors makes clear the strawberry school's socio-economic value.

## Delimitation

There are schools which are in session from April through December in Polk County. The writer is familiar with these schools, and this study will be limited to the strawberry school at Kathleen, Florida.

The study will compare the achievement records of all students who completed the seventh grade of the above school in the year 1948 with those of a winter school. This delimitation is necessary because only for these groups are the records complete.

## Definitions of Terms Used

Winter Schools: Schools which operate during one fiscal year, with the opening date of the school year sometime in September, and the closing date in June, are called winter schools.

Strawberry Schools: Schools which operate from a date near the first of April of one calendar year until near Christmas of the same calendar year are called strawberry schools.

Achievement Tests: These tests measure a special kind of ability, that which is obviously and admittedly dependent upon the results of designed learning or training situations.[6]

Chronological Age: The number of years and months which have elapsed since the individual's birth is his chronological age.[7]

Educational Age: This is computed through the results of standardized achievement tests and indicates the educational level or school grade for which the individual is fitted.[8]

Intelligence Quotient: The intelligence quotient is a measure of brightness, or of rate of intellectual development.[9] The formula for the computation of the intelligence quotient is the mental age divided by the chronological age.

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[6] Ross, C. C., Measurement in Today's Schools. New York: Prentice-Hall, Inc., 1947. P; 24 - 25.

[7] Crow, Lester D. and Alice Crow, Introduction to Education. New York: American Book Co., 1947. P. 130.

[8] Ibid., P. 130.

[9] Ross, Op. Cit., P. 292.

Educational Quotient: The measure of the rate of educational growth or development is known as the educational quotient.[10] It is computed by dividing the educational age by the chronological age.

Accomplishment Ratio: The accomplishment ratio is found by dividing the educational quotient by the intelligence quotient. Accomplishment ratio is a measure of effort or motivation or opportunity.[11]

Range: Range is defined as the interval between the largest and smallest scores.[12]

Mean: Mean is the sum of the separate scores or measures in a series divided by their numbers.[13]

Median: The median is defined as the midpoint of the series; that is, as the point above which and below which are fifty percent of the scores or measures.[14]

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[10] Ross, *Op. Cit.*, P. 302

[11] Symonds, Percival M., *Measurement in Secondary Education*. New York: The Macmillan Co., 1930. P. 324.

[12] Garrett, Henry E., *Statistics in Psychology and Education*. New York: Longmans, Green and Co., 1935. P. 17.

[13] *Ibid*, P. 8.

[14] *Ibid*, P. 11.

### Organization of Remainder of Thesis

In the second chapter of this study the chronological ages of the pupils who attend the two types of schools will be compared. Since the chronological age is the basic divisor in establishing the intelligence quotient and therefore the accomplishment ratio, this comparison is essential in establishing the final results. The percentage of pupils over age in grade and of those who are below the normal age at the completion of the seventh year of school will be compared. Likewise, the range of ages, the mean age, and the chronological ages, will be compared.

The third chapter of the study will deal with the intelligence quotients of the pupils in the two types of schools. These quotients will be classified and compared in several ways. This comparison is necessary because no measure of educational achievement could be considered valid which does not take into consideration intelligence.

The fourth chapter will deal with the educational quotient. In this chapter, an analysis will be made of the subjects covered in the battery of achievement tests.

The next chapter will compare the accomplishment ratios of the students. In this chapter the comparisons will be made between the two types of schools and the reliability of the accomplishment ratio as a measure will be established.

The final chapter will summarize the findings and state the conclusions established in the preceding chapters.

Various tables will be used throughout the study to illustrate the various comparisons.

Procedure in Treating Data

In the Appendix, on Pages 52 to 63, the complete data which is used in this study is shown.

The first column shows the chronological ages. These ages were taken from the permanent record cards, where they were recorded at the time of the children's first registration in school and later verified by presentation of the birth certificates. These ages will be compared against the normal ages for pupils who have completed seven years of school.

The second column lists the intelligence quotients of the pupils. In the case of the winter school, these figures were taken from the students' record cards. In the strawberry school it was necessary to administer a test of mental ability. The intelligence quotients will be compared according to Terman's classification of intelligence quotients.

The third column shows the educational ages of the pupils as derived from the results of the Stanford Achievement tests, which are given the seventh grade pupils of the Polk County schools during the ninth month of school. This figure will be used in computing the educational quotient.

The fourth column lists educational quotients. These figures are computed by dividing the educational age by the chronological age. The educational quotients will be compared according to the percentage of pupils above the average mean educational quotient of both groups.

The final column lists the accomplishment ratios of the groups. The accomplishment ratio is the figure resulting from the division of the educational quotient by the intelligence quotient. The accomplishment ratios will be compared in two different ways; first, the percentage over 100, and second, the intelligence quotient groups.

In each group of figures, the range, mean, and median will be computed for both groups.

# CHAPTER II

## CHRONOLOGICAL AGE

Chronological age is the number of years and months that have elapsed since the individual's birth.[15] The state plan for primary and secondary school education contemplates the compulsory education of children between the ages of seven and sixteen years, inclusive, and the permissive education of children over sixteen years of age, in their own counties, until they complete high school, and of children who may attain the age of five years, nine months, prior to the opening of the school term.[16] The child is forbidden to enter the first grade of the elementary school until he has reached the chronological age of 69 months. Because of their birthdates, many cannot enter school until they have reached an age of near 81 months. Since the pupils in this study have completed seven years of school, the chronological age for the average pupil who has not been retarded or accelerated, will fall somewhere between 153 and 165 months.

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[15] Crow, Lester D., and Alice Crow, Introduction to Education. New York: American Book Co., 1947. P. 130.

[16] Attorney General for Florida, Florida Laws Pertaining to Children. Tallahassee: Florida Congress for Parents and Teachers, 1945. P. 18.

The chronological ages of all students who have completed the seventh grade in a winter school was compared with the same group in a strawberry school, using the maximum, 165 months, to ascertain the percentage in each group who were over age in grade. As shown by the table at the conclusion of this chapter, it was found that 44 percent of the students of the strawberry school were over the normal age, while in the winter school the percentage of over age pupils was only 23.9 percent. This indicates that in the strawberry school 20 percent more of the pupils are retarded than in the winter school. The percentage of pupils accelerated is higher in the winter school than in the strawberry school, although the difference is not as great.

The range of ages of the strawberry school students was computed to be 85 months, while that of the winter school was 78 months. The youngest pupil in the strawberry school was transferred from out of state, where she was able to begin school earlier than would have been the case in the state of Florida and she was accelerated one year, also. The pupil with the highest age was retarded several years due to lax attendance caused by illness, in his early grades, and lack of interest, in the middle grades.

The mean age of the strawberry school pupils was found to be 165.67 months, while that of the winter school pupils was 160.28 months.

The median age of the pupils of the strawberry school and of the winter school was computed. This was 164.00 months for the strawberry school and 158.79 months for the winter school.

The reasons for the retardation of the pupils in the strawberry school are as follows: first, low level of intelligence, as shown by table on Page 24 (Table II); second, economic conditions, which have forced pupils to change schools many times; third, irregular attendance; and fourth, definite disability in one or more of the tool subjects. This greater percentage of retardation in the strawberry school is not unusual in view of the fact that the pupils mainly come from farm homes. Studies have been made which indicate that rural children, especially farm children, take one-third of a year to a year more to complete the first eight grades.[17]

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[17] Kolb, J. H., and E. de S. Brunner, A Study of Rural Society. New York: Houghton Mifflin Co., 1946. P. 74.

## TABLE I

## COMPARISON OF CHRONOLOGICAL AGES OF ALL SEVENTH GRADE STUDENTS IN A WINTER SCHOOL AND A STRAWBERRY SCHOOL

| | |
|---|---|
| Normal Age of Pupil at Completion of Seventh Year of School | 153 to 165 Months |
| Percent above Normal Age, Winter School | 23.9 % |
| Percemt above Normal Age, Strawberry School | 44.0 % |
| Difference | 20.1 % |
| Percent below Normal Age, Winter School | 20.9 % |
| Percent below Normal Age, Strawberry School | 13.0 % |
| Difference | 7.0 % |
| Mean Age, Winter School | 160.28 Months |
| Mean Age, Strawberry School | 165.67 Months |
| Median Age, Winter School | 158.79 Months |
| Median Age, Strawberry School | 164.00 Months |
| Range, Winter School | 78.00 Months |
| Range, Strawberry School | 85.00 Months |

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# CHAPTER III

## INTELLIGENCE QUOTIENT

Intelligence is that combination of mental factors which the individual is supposed to use in achieving some aim or goal in life, or the ability to adjust himself adequately to a new situation.[18] The intelligence quotient is a measure of brightness, or of rate of intellectual development.[19] The aim of intelligence tests is to measure ability which is general, rather than specific, and capacity which is native or inborn, rather than acquired through education.[20]

It is not proposed to base the findings of this study upon the comparative intelligence quotients of the students, but they are being presented because the accomplishment ratio, which is a measure of effort, motivation, or opportunity,[21] is based upon the intelligence quotients of the cases used.

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[18] Sorokin, P. A., and C. Zimmerman, Principles of Rural-Urban Sociology, Part III. New York: Henry Holt Co., 1929. P. 234.

[19] Ross, C. C., Measurement in Today's Schools. New York: Prentice-Hall, Inc., 1947. P. 292.

[20] Lincoln, E. A., and L. L. Workman, Testing and Use of Test Results. New York: The Macmillan Co., 1935. P. 21.

[21] Symonds, Percival M., Measurement in Secondary Education. New York: The Macmillan Co., 1930. P. 324.

In this study, the intelligence quotients of the winter school had already been calculated. The Henmon-Nelson Test of Mental Ability was the basis of the scores, as taken from the permanent record cards of the pupils.

Since no intelligence quotients were available for the pupils of the strawberry schools, it was necessary to administer mental ability tests. The Henmon-Nelson Test of Mental Ability -- Form A was used. Without advance notice to the students, the tests were administered to them by two teachers experienced in testing procedure. The tests were then returned to the writer and scored by him.

The Henmon-Nelson Test of Mental Ability is designed to measure the mental ability of students in the junior and senior high schools or in grades seven to twelve, inclusive.

The test consists of ninety items, arranged in order of increasing difficulty. A wide variety of types of questions is used, thus furnishing a test of many types of ability. The Henmon-Nelson Test has been compared with other tests, and the correlation is shown in the following tabulation.

## CORRELATION OF HENMON-NELSON TESTS FOR GRADES 7 TO 12 WITH OTHER TESTS OF MENTAL ABILITY [22]

| Name of Other Test | r | Grades | N |
|---|---|---|---|
| Otis Self-Administering Test (M.A.'s) | .777 | 8 | 235 |
| Otis Self-Administering Test (I.Q.'s) | .839 | 8 | 235 |
| Otis Self-Administering Test (Scores) | .810 | 13 | 65 |
| Otis Self-Administering Test (M.A.'s) | .79 | 9B | 57 |
| Terman Group Test (M.A.'s) | .802 | 8 | 235 |
| Terman Group Test (I.Q.'s) | .882 | 8 | 235 |
| Terman Group Test (I.Q.'s) | .72 | 10 | 554 |
| Terman Group Test (I.Q.'s) | .78 | 10 & 12 | 148 |
| Terman Group Test (I.Q.'s) | .858 | 11 | 178 |
| American Council Psychological Examination (Scores) | .79 | 12 | 80 |
| American Council Psychological Examination (P.R.'s) | .78 | 12 | 91 |
| Kuhlmann-Anderson Test (I.Q.'s) | .84 | 8 & 9 | 89 |
| Illinois Intelligence Scale (I.Q.'s) | .78 | 10 | 105 |

An analysis of the above tabulation reveals the close correlation between the Henmon-Nelson Test and other tests of mental ability, thus indicating its reliability.

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[22] Henmon, V.A.C., and M. J. Nelson, Henmon Tests of Mental Ability. New York: Houghton Mifflin Co., 1946. Teachers Manual.

In interpreting and evaluating the intelligence quotients used in this study, as tabulated in the Appendix, several comparisons were made.

### A. Terman's Classification

The classification of intelligence quotients was first published by Terman and has been in wide use since its appearance. The following tabulation gives the classifications as developed by Terman:

I.Q. above 140 - Near Genius or Genius
120 - 140 - Very Superior Intelligence
110 - 120 - Superior Intelligence
90 - 110 - Normal Intelligence
80 - 90 - Dullness
70 - 80 - Dull
Below 70 - Feeble Mindedness [23]

In comparing the intelligence quotients of pupils attending a winter school with those attending a strawberry school, the above classifications were used. The percentages of pupils falling within the bounds of each classification were computed for each group. These percentages are shown in the table at the conclusion of this chapter.

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[23] Louttit, C. M., _Clinical Psychology of Children's Behavior Problems_. New York: Harper & Bros., 1947. P. 97.

From this table, it can be seen that the intelligence quotients of the strawberry school students is skewed toward the lower end of the range.

B. Range

The range of intelligence quotients for the strawberry school was 85 and the range of the winter school quotients was 99.

C. Mean

The mean is that point in the range above and below which there is an exactly equal number of units of deviation. The mean intelligence quotient of the strawberry school students was found to be 90.66, while that of the winter school pupils was 101.33.

D. Median

The median is that point in the scale above and below which are found an equal number of cases. The median intelligence quotient for the strawberry school was found to be 89, while that of the winter school was 103.

In analyzing these percentages, mean, and median, it was found that the intelligence quotients of the strawberry school pupils were much lower than those of the winter school pupils. The lower intelligence quotients of this group may be due to one or both of the following factors:

## A. Environment - Mental and Social

Sorokin and Zimmerman point out that there is disagreement as to the respective contributions of inherited and environmental factors in intelligence, and conclude that it is a composition of the innate abilities, polished by environments, both mental and social.[24] With the above statement in mind, one must observe the environment of the strawberry school pupils. In a majority of cases, the educational background of the parents is low; that is, very few of them have had much formal education. This is meant as no reflection on the immediate area. It is in line with the over all average of farm communities, as shown by studies conducted by the Census Bureau in 1940, which show that the median years of school completed by farm groups are lower than those of urban groups.[25] The reading material, if any, available in the homes is of the type that is not conducive to raising the intellectual level of its readers.

## B. Type of Test

The difference in the intelligence quotients between these two groups could be attributed to the type of test used. Intelligence tests often measure acquaintanceship

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[24] Kolb, J. H., and E. de S. Brunner, _A Study of Rural Society_. New York: Houghton Mifflin Co., 1946. P. 68.

[25] _Ibid._, P. 439.

with types of experience which are more largely urban than rural. The alleged inferiority of any group over another may, therefore, be laid to the instruments used in testing rather than to any innate difference in the groups themselves.[26]

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[26] Ibid., P. 73.

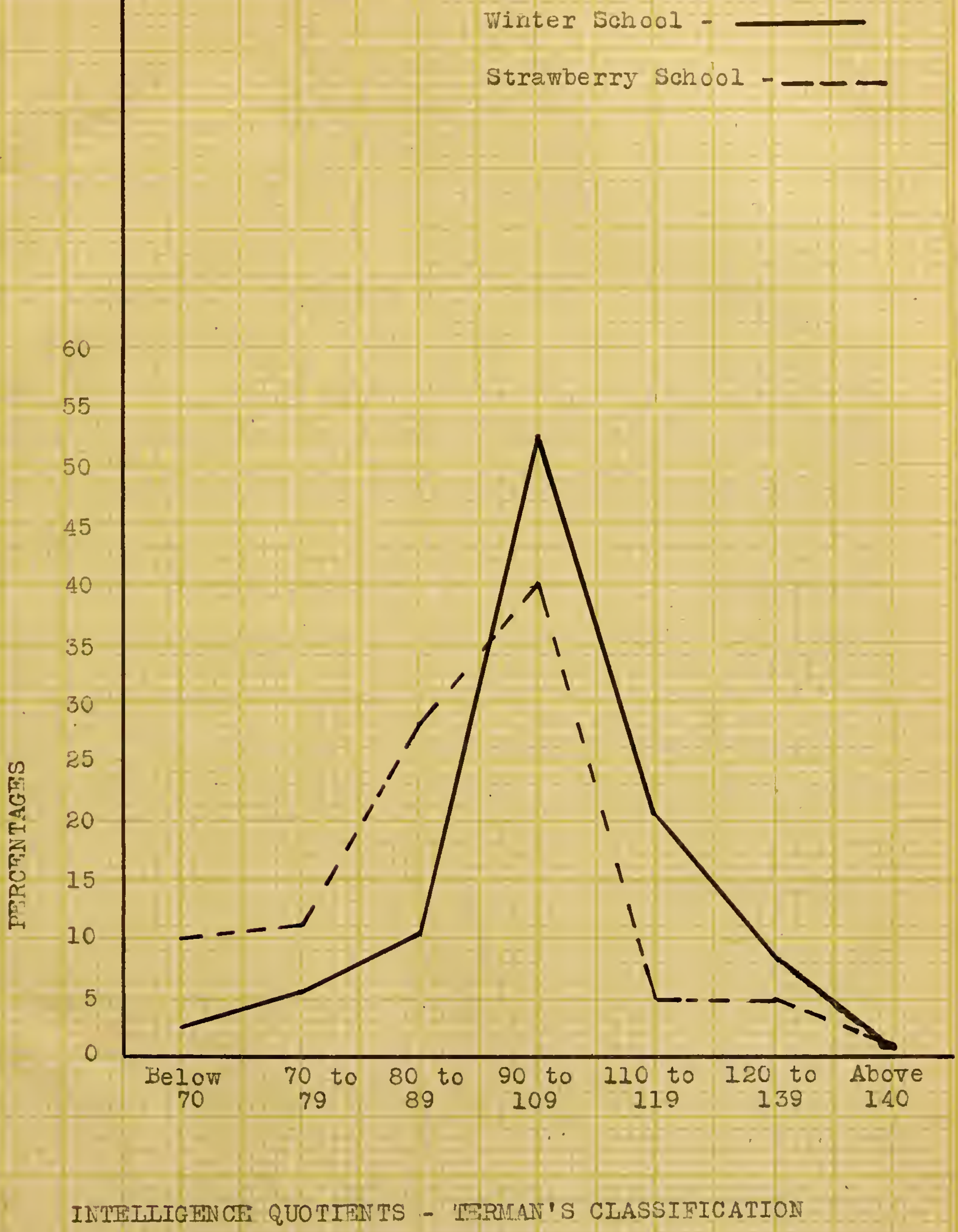
## TABLE II

## COMPARISON OF INTELLIGENCE QUOTIENTS OF ALL SEVENTH GRADE STUDENTS IN A WINTER SCHOOL AND A STRAWBERRY SCHOOL

| I.Q. | Classification | Winter School | Strawberry School |
|---|---|---|---|
| 140 and Above | "Near" Genius or Genius | .70% | 1% |
| 120 - 139 | Very Superior Intelligence | 8.45% | 5% |
| 110 - 119 | Superior Intelligence | 20.42% | 5% |
| 90 - 109 | Normal Intelligence | 52.10% | 40% |
| 80 - 89 | Dullness | 10.60% | 28% |
| 70 - 79 | Dull | 5.63% | 11% |
| Below 70 | Feeble Mindedness | 2.10% | 10% |
| Range | | 99 | 85 |
| Mean | | 101.33 | 90.66 |
| Median | | 103 | 89 |

GRAPH NO. I

INTELLIGENCE QUOTIENTS



# CHAPTER IV

## EDUCATIONAL QUOTIENT

Achievement tests measure a special kind of ability, that which is obviously and admittedly dependent upon the results of designed learning or training situations.[27] The most common units used to interpret the results of achievement tests are either the educational age or the educational quotient. Accomplishment ratio can be computed by dividing the educational quotient by the intelligence quotient, or the educational age by the mental age. Since the educational quotient and the intelligence quotient are more free from error (because both use the chronological age, in which there is no error) than the educational age and mental age, the educational quotient, rather than the educational age, will be used in this study to compute the accomplishment ratio.

In both the winter school and the strawberry school, sometime during the ninth month of school the Stanford Achievement Tests are administered to the seventh grade pupils. These tests are designed to measure the reading comprehension, paragraph meaning, language usage, arithmetic

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[27] Ross, C. C., Measurement in Today's Schools. New York: Prentice-Hall, Inc., 1947. Pp. 24 - 25.

[illegible]

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[illegible]

computation, arithmetic reasoning, literature, social studies, science, and spelling ability of the pupils. The equated scores for these tests are, by use of the profile chart, transferred into educational age. As mentioned in a preceding paragraph, it is the intention of this study to use the educational quotient for computation of the accomplishment ratio. Educational quotient is the measure of rate of educational development.[28] Educational quotient is computed by dividing the educational age by the chronological age.

The range of educational quotients in the winter school was found to be 71 while that in the strawberry school was found to be 64. The mean score of the winter school was found to be 94.73, as compared with the strawberry school mean of 89.11. The median scores were 94.09 for the winter school and 87.5 for the strawberry school.

An evaluation of these scores brings out several factors for analysis. Since the Stanford Achievement battery of tests consists of several subjects, a breakdown of comparative ability in the various subjects is necessary, to properly evaluate the scores.

The first test of the battery consists of reading comprehension and paragraph meaning. In this phase of the test the winter school scores were somewhat better than the scores

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[28] Ibid., P. 302.

of the strawberry school pupils. In this connection, it was found that 32 percent of the pupils of the strawberry school were below the educational age of five years in reading ability. The winter school percentage in the same category was 20 percent. Since reading is considered one of the tool subjects, this is the primary reason for the greater percentage of retardation in the strawberry school.

In the portion of the test on arithmetic, the scores of the groups were nearly the same. This is due to the fact that in the strawberry school there was greater interest in this tool subject and less motivation was needed to bring about greater results.

The strawberry school fell very low on the portion of the test which was concerned with literature. There are several factors which influenced this, the outstanding one being the home environment of the pupils. The homes of the pupils do not contain many books. The usual reading material to be found there includes the daily newspaper, pulp magazines, and religious publications. The only possible opportunity the students have of procuring classical reading is through the school library. This phase of the school was neglected for some time, due to lack of funds and facilities. During the past year, the library of the strawberry school studied has been expanded so that it compares favorably with that of the winter school. Reading of good literature is

being encouraged by all the teachers, and with the aid of a very efficient and well-trained librarian, this phase of the school has shown great improvement.

In the portion of the test based on language usage, the strawberry school was surpassed by the winter school. This difference again can be attributed partly to the home environment of the pupils. As pointed out, the educational level of the parents of the rural school pupils is much lower than that of the urban population. The children have become accustomed to incorrect language usage and have a difficult time correcting it in the time they are in school.

In one phase of this test, only, the strawberry school students surpassed those of the winter school. This was in the science portion of the test. Since this was a practical test on the various phenomena of nature, and the strawberry school pupils were more familiar with this subject, their scores on this portion of the test were very creditable.

In summarizing this chapter, we can point out the following reasons for the lower educational quotient of the strawberry school students: First, lower level of intelligence, as tabulated in Table II on Page 24; second, disability in the tool subjects, particularly reading; and, third, the type of environment in which the children live.

## TABLE III

## EDUCATIONAL QUOTIENT

| | Winter School | Strawberry School |
|---|---|---|
| Mean | 94.73 | 89.11 |
| Median | 94.09 | 87.5 |
| Range | 71 | 64 |

| | |
|---|---|
| Average Mean of both Groups . . . . . | 92 |
| Percent of Strawberry School Students above Average Mean . . . . . | 41 |
| Percent of Winter School Students above Average Mean . . . . . | 58.4 |

# CHAPTER V

## ACCOMPLISHMENT RATIO

The accomplishment ratio is used as a measure of effort, motivation, or opportunity.[29] The accomplishment quotient is a ratio between the educational quotient and the intelligence quotient. The educational quotient is a ratio between the educational age and the chronological age. The educational age is derived from the use of standardized tests, the norms being arranged so as to yield educational ages. Since the accomplishment ratio is a ratio of the educational quotient and the intelligence quotient, it then registers the relationship of ability, as indicated by an intelligence test, to actual educational achievement.

The accomplishment ratio represents the work of the pupil much more fairly than the educational record taken by itself.[30] It indicates whether the pupil is making a worthy effort. The accomplishment ratio shows whether the student is doing as well as his intelligence allows. His raw score on educational tests will show, not effort, but the fact

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[29] Symonds, Percival M., Measurement in Secondary Education. New York: The Macmillan Co., 1930. P. 324.

[30] Mursell, James L., The Psychology of Secondary School Teaching. New York: W. W. Norton & Co., Inc., 1939. P. 342.

that he may or may not be doing as well as others in his group. Therefore, the accomplishment ratio will give a real idea of effort that the pupil is making.[31]

To know what a pupil is doing with the capacity at hand is of extreme importance.[32] This ratio is a ratio of ability to capacity. The use of the mental test is a measure of capacity. The achievement test is a measure of ability. Both are expressed in the same terms. Both use the common divisor, chronological age, in which there is no error. The intelligence quotient was derived from the Henmon-Nelson Test, where the probable error in raw score is 2.9. The educational quotient was computed from the results of Stanford Achievement Tests, in which the probable error is .98. This small margin of error would indicate that both tests are reliable.

The general principle of the accomplishment ratio is absolutely sound.[33] Intelligence must be taken into consideration in the evaluation of any educational performance.

Louttit considers the accomplishment ratio a more useful measure than the mental age or the educational age.[34]

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[31] Ibid., P. 344.

[32] Gates, Arthur I., Psychology for Students of Education. New York: The Macmillan Co., 1930. P. 544.

[33] Ibid., P. 545.

[34] Louttit, C. M., Clinical Psychology of a Child's Behavior Patterns. New York: Harper & Bros., 1945. P. 124.

If the accomplishment ratio falls below 100, it is an indication that the pupil is not living up fully to his capacities.[35]

Educators have grasped at the accomplishment ratio as a very valuable unit.[36] It is better to restrict the use of the accomplishment ratio to the measurement of groups than to the measurement of individuals.[37] Two schools, therefore, can be measured by the accomplishment ratio. The concept of the accomplishment ratio shows us a new way to judge people.[38]

Pechstein, in a study of accomplishment ratios, using 359 cases, discovered that 19 percent of his cases had accomplishment ratios of below 90, 52 percent of his cases had accomplishment ratios of from 90 to 110, and 29 percent of them were above 110.[39]

In the present study, 242 cases were used and 27 percent were found to have accomplishment ratios of less than

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[35] Ross, C. C., Measurement in Today's Schools. New York: Prentice-Hall, Inc., 1947. P. 309.

[36] Symonds, Op. Cit., P. 327.

[37] Ross, Op. Cit., P. 309.

[38] Symonds, Op. Cit., P. 328.

[39] Pechstein, L. A., and A. Laura McGregor, Psychology of the Junior High Pupil. New York: Houghton Mifflin Co., 1924. P. 93.

90, 68.5 percent had accomplishment ratios of between 90 and 110, and 4.5 percent had accomplishment ratios of more than 110. Pechstein, in his study, also made a frequency distribution of accomplishment ratios. As noted in the table at the conclusion of this chapter, the frequency distribution of this study compares very favorably with Pechstein's.

An accomplishment ratio of 100 or over indicates that the pupil is working up to his full capacity. It is found that 45 percent of the strawberry school pupils have an accomplishment ratio of 100 or over, while only 25.35 percent of the winter school pupils exceed this figure.

### Range

The range of accomplishment ratios in the winter school was 54, while that of the strawberry school was 57.

### Mean

The mean accomplishment ratio of the winter school was 93.75, while that of the strawberry school was 98.68.

### Median

The median accomplishment ratio for all of the cases studied in the winter school was 93.8 and that of the strawberry school was 99.0.

Since there is some discrepancy in the value of the accomplishment ratio as a measure, when there is such a wide variance of intelligence quotients, the two groups have been divided according to Terman's classification of intelligence

quotients. The median for each group was computed, and they are shown in tabular and graphic form at the conclusion of this chapter.

An analysis of this table and graph shows that in the lower intelligence quotient levels the accomplishment ratio of both the winter school and the strawberry school pupils is above 100, indicating that these pupils are working to their fullest capacity. In the normal intelligence group, those with intelligence quotients of 90 to 110, the median accomplishment ratio for the winter school is 91.9 and that of the strawberry school is 102. An analysis of the highest intelligence quotients, those of 140 and over, shows only one case in each school which falls in this category. The accomplishment ratio for the winter school student attaining this high rating was 82; the accomplishment ratio of the strawberry school student was 94.

# TABLE IV

## PERCENTAGE OF PUPILS FALLING WITHIN CERTAIN ACCOMPLISHMENT RATIO GROUPS

| A. R. | Pechstein | Complete Groups | Winter School | Strawberry School |
|---|---|---|---|---|
| Below 90 | 19 | 27 | 36 | 15 |
| 90 - 110 | 52 | 68.5 | 62 | 77 |
| Above 110 | 29 | 4.5 | 2 | 8 |

## TABLE V

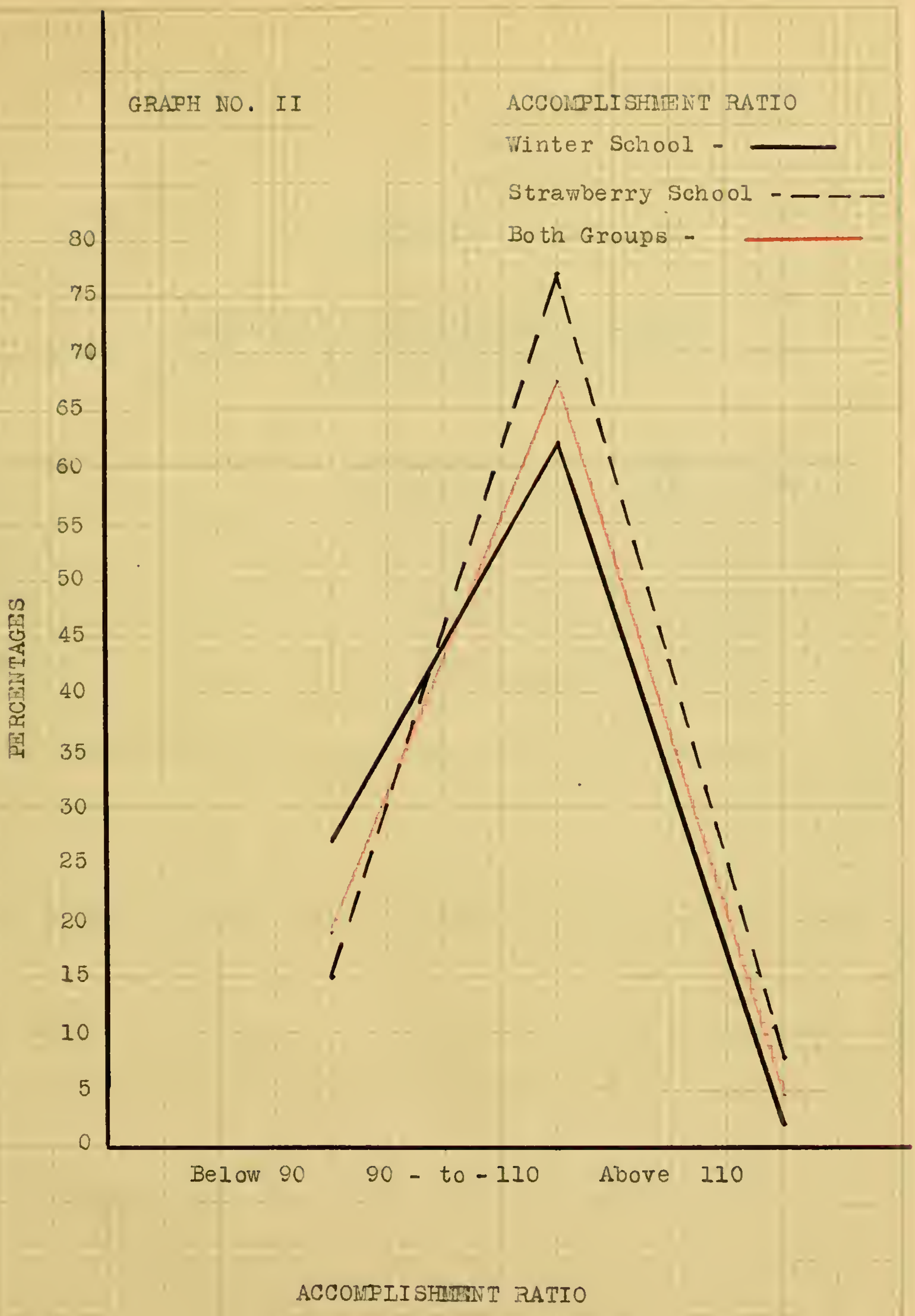
## FREQUENCY DISTRIBUTION
## OF ACCOMPLISHMENT RATIOS

| A. R. | Pechstein | Complete Groups | Winter School | Strawberry School |
|---|---|---|---|---|
| 50 - 59 | 0 | 0 | 0 | 0 |
| 60 - 69 | 1 | 1 | 0 | 1 |
| 70 - 79 | 13 | 6 | 3 | 3 |
| 80 - 89 | 53 | 61 | 50 | 11 |
| 90 - 99 | 93 | 92 | 53 | 39 |
| 100 - 109 | 96 | 58 | 28 | 30 |
| 110 - 119 | 63 | 15 | 3 | 12 |
| 120 - 129 | 25 | 8 | 4 | 4 |
| 130 - 139 | 10 | 1 | 1 | 0 |
| 140 - 149 | 5 | 0 | 0 | 0 |
| TOTALS | 359 | 242 | 142 | 100 |

## TABLE VI

## COMPARISON OF ACCOMPLISHMENT RATIOS
## OF ALL SEVENTH GRADE STUDENTS
## OF A WINTER SCHOOL WITH THOSE OF A STRAWBERRY SCHOOL

| | Winter School | Strawberry School |
|---|---|---|
| Percent of Pupils Attaining an A. R. of 100 or Over | 25.35 | 45.00 |
| DIFFERENCE | 19.65 | |


GRAPH NO. II

ACCOMPLISHMENT RATIO
Winter School - ——
Strawberry School - — — —
Both Groups - ——
PERCENTAGES
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
Below 90
90 - to - 110
Above 110
ACCOMPLISHMENT RATIO

## TABLE VII

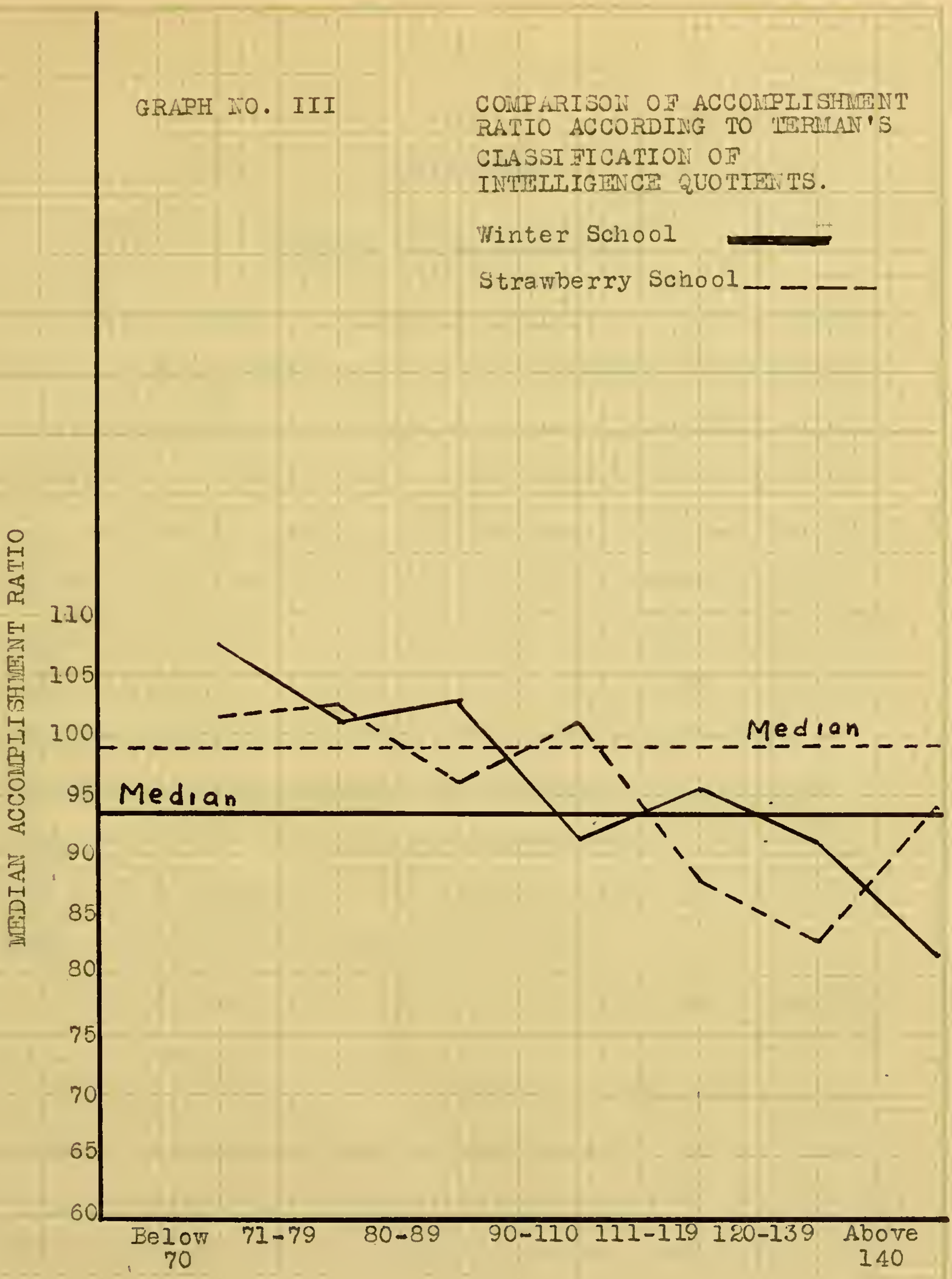
## COMPARISON OF ACCOMPLISHMENT RATIOS OF ALL CASES STUDIED

| | Winter School | Strawberry School |
|---|---|---|
| Range | 54 | 57 |
| Mean | 93.73 | 98.68 |
| Median | 93.8 | 99.0 |

## TABLE VIII

## COMPARISON OF MEDIAN ACCOMPLISHMENT RATIOS ACCORDING TO TERMAN'S CLASSIFICATION OF INTELLIGENCE QUOTIENTS

| Intelligence Quotient | Winter School | Strawberry School |
|---|---|---|
| Above 140 | 82 | 94 |
| 120 - 139 | 91.0 | 83 |
| 111 - 119 | 95.5 | 87.5 |
| 90 - 110 | 91.9 | 102.0 |
| 80 - 89 | 102.0 | 96.87 |
| 71 - 79 | 101.66 | 102.5 |
| 70 and below | 107.5 | 101.8 |



GRAPH NO. III

COMPARISON OF ACCOMPLISHMENT RATIO ACCORDING TO TERMAN'S CLASSIFICATION OF INTELLIGENCE QUOTIENTS.

# CHAPTER VI

## SUMMARY AND CONCLUSIONS

The strawberry school, as pointed out in the first chapter of this study, arises out of climatic and economic conditions applicable to meny sections of Florida, and especially true of Polk County. The community in which the school studied is located is predominantly rural. The area contains small farms on which are grown strawberries and vegetables, as well as numerous large and small orange and grapefruit groves. At harvest time, these farms and groves provide employment for a great many more workers than are needful during other seasons of the year. Not only are workers needed on the farms and in the groves, but thousands must be employed in the packing houses and canning plants, to process and market the crops.

The parents of the students attending the strawberry school have made known their desire for the continuance of the operation of this type of school. On the farms, it is necessary for parents to work long hours during the harvest season. They would be unable, during this time, to give the children the help and encouragement needed when they are in school. It is sometimes necessary for one or both parents, and also for the older children, to seek outside work during

this peak employment season, to supplement the family income in order to secure proper school clothing and supplies, without which it would be necessary for some of them to drop out of school.

Francis J. Brown points out that the economic factor is paramount among many reasons why the school has failed to hold a higher proportion of children . . . for more years. Data on the education of a group of enlisted personnel in the armed forces who had little schooling show that more than half gave "had to go to work" or "had to help at home" as their reason for quitting school. The second reason most frequently given was "didn't like school." . . . The same replies would indicate, if worded differently, that the basic factors involved were low family income, the failure on the part of the school to challenge the interest of the children or their parents, and inadequate school facilities. If America is to achieve its goal of equality of educational opportunity, . . . schools . . . must make many changes in fundamental organization . . . and in the relation of the school to the community which it serves.[40] The importance of the school's adaptation to the community which it serves cannot be overemphasized.

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[40] Brown, Francis J., Educational Sociology, New York: Prentice-Hall, Inc., 1947. P. 279.

A comparison of the chronological ages of the students selected was carried out, since the chronological age is a major factor in the determination of the intelligence quotient. The results show that the percentage of students over age in grade in the strawberry school is 44, while in the winter school it is only 23.9. In view of the fact that most of the pupils in the strawberry school come from farm homes, this difference is easily explained. Studies have been made which indicate that rural children, especially farm children, take one-third of a year to a year more to complete the first eight grades.[41]

The average seventh grade pupils' chronological age should fall somewhere between 152 and 164 months. Many environmental and economic factors enter into the picture which shows that many students are retarded, and a few accelerated, so that there can be quite a wide variation of ages within a single school grade. The chronological ages of the students of the strawberry schools are greater than those of the winter school pupils. This is in line with the over all age of rural students, as noted above.

Trying to compare accomplishment without taking into consideration the children's innate intelligence, or capacity,

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[41] Kolb, J. H., and E. de S. Brunner, A Study of Rural Society. New York: Houghton Mifflin Co., 1946. P. 74.

would be like trying to measure the comparative output of two factories without taking into consideration the size of the establishments. There are limits beyond which it is impossible to force a low mentality. There are ideas which it is impossible for a feeble mind to grasp. This does not mean that there is no useful work which this individual can do. There are tasks which he can do well which it would be impossible for a genius to perform satisfactorily over a period of time. In our complex modern society, there is wide opportunity for all types of people, if their energies are directed into the proper channels. The school's attempt to direct this energy is one of the major problems now being confronted.

The intelligence quotients of the strawberry school pupils, in the group considered, are slightly lower than those of the winter school pupils. Sorokin and Zimmerman state that there is disagreement as to the respective contributions of inherited and environmental factors in intelligence, and conclude that it is a composition of the innate abilities, polished by environments, both mental and social.[42] The poor environment and scarcity of reading material existing in the homes of the strawberry school community, and the lower level of formal education among the parents, have a

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[42] Ibid., P. 68.

definite bearing upon the showing of the children in intelligence tests. These factors have less weight when the accomplishment ratio is computed, which is the primary reason that accomplishment ratio was chosen as the basis of final comparison of the students of the two schools.

In comparing the results of the Stanford Achievement Tests, (which results show the students' educational ages) it was found that the winter school students surpassed the strawberry school students in every phase of the test except elementary science and arithmetic. In reading comprehension and paragraph meaning, literature and language usage, the strawberry school average fell short of that of the winter school. In arithmetic, their scores were nearly the same. In elementary science, the strawberry school students' scores were higher than those of the winter school students.

Since it was the purpose of this study to use the educational quotient (the measure of rate of educational development) as a basis for computation of the accomplishment ratio, it was necessary to divide the educational age by the chronological age, in order to arrive at the educational quotient. The range of educational quotients in the in the winter school was found to be 71, while that in the strawberry school was found to be 64. The mean and median scores of the winter school were 94.73 and 94.09, respectively, and in the strawberry school 89.11 and 87.5, respectively.

An evaluation of these scores on the basis of the comparative ratings of the students in the several subjects, as listed above, reveals that disability in the tool subjects, particularly reading, is a prime factor in the lower rating of the strawberry school pupils.

Symonds gives the following definition: The accomplishment ratio is used as a measure of effort, motivation, or opportunity.[43] Mursell says: The accomplishment ratio represents the work of the pupil much more fairly than the educational record taken by itself.[44] Gates claims that: To know what a pupil is doing with the capacity at hand is of extreme importance.[45] Symonds states: Educators have grasped at the accomplishment ratio as a very valuable unit.[46] Louttit considers the accomplishment ratio a more useful measure than the mental age or the educational age.[47]

The value of the accomplishment ratio has been disputed where there is a wide variance in the intelligence

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[43] Symonds, Percival M., Measurement in Secondary Education. New York: The Macmillan Co., 1930. P. 324.

[44] Mursell, James L., The Psychology of Secondary School Teaching. New York: W. W. Norton & Co., Inc., 1939. P. 342.

[45] Gates, Arthur I., Psychology for Students of Education. New York: The Macmillan Co., 1930. P. 544.

[46] Symonds, Op. Cit., P. 327.

[47] Louttit, C. M., Clinical Psychology of a Child's Behavior Patterns. New York: Harper & Bros., 1945. P. 124.

quotients of respective groups. To offset this discrepancy, an evaluation was made, not only of the entire groups, but, in addition, of the cases whose intelligence quotients fall within the same classifications.

The evaluation shows that the median accomplishment ratio of the strawberry school pupils is slightly higher than that of the winter school students, in the entire group. An analysis of the various classifications shows that the accomplishment ratio is comparable at all levels of intelligence.

American education, in the present century, has shown a steady progress toward standardization. The chief reasons for the increasing rapprochement between urban and rural areas lie in our educational system, our facilities for communication and transportation, and the mobility of our population.[48]

It has been proved by a previous study that the attendance records of the winter schools and strawberry schools are comparable.[49] The schools are in session an equal number of days (180 teaching days). The teachers are required to

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[48] Kolb, J. H., and E. de S. Brunner, A Study of Rural Society. New York: Houghton Mifflin Co., 1946. P. 67.

[49] Nelson, Frank A., A Comparison of Attendance Records between Regular and Strawberry School Terms in Polk County, Florida. DeLand: Stetson University, 1948. P. 82.

possess the same qualifications. The textbooks are the state adopted books.

In view of the fact that the accomplishment ratios of the strawberry school pupils compare favorably with those of the winter school pupils, and of the importance of the accomplishment ratio as a measure of educational progress, it is concluded that the continued operation of the strawberry schools is warranted.

# APPENDIX

## TABULATION OF ALL FIGURES USED
## SHOWING CHRONOLOGICAL AGES, INTELLIGENCE QUOTIENTS,
## EDUCATIONAL AGES, EDUCATIONAL QUOTIENTS, AND
## ACCOMPLISHMENT RATIOS OF ALL STUDENTS
## AT THE COMPLETION OF SEVENTH GRADE
## IN BARTOW JUNIOR HIGH SCHOOL, BARTOW, FLORIDA,
## A WINTER SCHOOL,
## AND
## IN KATHLEEN JUNIOR HIGH SCHOOL, KATHLEEN, FLORIDA,
## A STRAWBERRY SCHOOL

The figures in these two tables are compiled from data on the permanent record cards of the Bartow Junior High School, Bartow, Florida, and Kathleen Junior High School, Kathleen, Florida, which show chronological ages, educational ages, and intelligence quotients.

The scores tabulated are the complete data used in this study.

The chronological age was taken from the permanent record cards and transposed to months, to facilitate computation of the educational quotient.

The intelligence quotients, in both cases, are the results obtained from the Henmon-Nelson Tests of Mental Ability, Form A, for grades 7 - 12.

The educational age was derived from the results of Stanford Achievement Tests which were given both groups on the completion of the seventh grade of school.

The educational quotient was computed by the following formula: $EQ = \frac{EA}{CA}$..

The accomplishment ratio was computed using the formula: $AR = \frac{EQ}{IQ}$ .

## WINTER SCHOOL

| C.A. (Months) | I.Q. | E.A. (Months) | E.Q. | A.R. |
|---|---|---|---|---|
| 156 | 125 | 192 | 123 | 98 |
| 151 | 118 | 192 | 120 | 102 |
| 161 | 120 | 188 | 117 | 98 |
| 160 | 104 | 187 | 117 | 112 |
| 150 | 113 | 185 | 123 | 108 |
| 160 | 110 | 184 | 115 | 104 |
| 149 | 113 | 181 | 121 | 107 |
| 159 | 113 | 180 | 113 | 100 |
| 148 | 148 | 180 | 122 | 82 |
| 152 | 108 | 178 | 117 | 108 |
| 153 | 137 | 177 | 116 | 85 |
| 161 | 100 | 174 | 108 | 108 |
| 155 | 101 | 172 | 111 | 110 |
| 150 | 102 | 171 | 114 | 112 |
| 137 | 132 | 171 | 125 | 95 |
| 150 | 111 | 180 | 120 | 108 |
| 152 | 114 | 168 | 111 | 97 |
| 154 | 104 | 168 | 109 | 105 |
| 168 | 100 | 168 | 100 | 100 |
| 163 | 119 | 166 | 102 | 85 |
| 161 | 112 | 190 | 118 | 105 |

## WINTER SCHOOL

| C.A. (Months) | I.Q. | E.A. (Months) | E.Q. | A.R. |
|---|---|---|---|---|
| 160 | 110 | 166 | 104 | 95 |
| 154 | 111 | 165 | 107 | 96 |
| 158 | 125 | 165 | 104 | 83 |
| 151 | 122 | 165 | 109 | 89 |
| 142 | 126 | 162 | 114 | 90 |
| 150 | 100 | 159 | 106 | 106 |
| 137 | 125 | 158 | 116 | 93 |
| 151 | 115 | 157 | 104 | 90 |
| 151 | 113 | 157 | 104 | 92 |
| 141 | 126 | 154 | 109 | 87 |
| 154 | 103 | 153 | 99 | 96 |
| 155 | 105 | 152 | 98 | 93 |
| 157 | 106 | 151 | 96 | 91 |
| 160 | 109 | 149 | 93 | 85 |
| 159 | 94 | 149 | 94 | 100 |
| 150 | 116 | 187 | 125 | 108 |
| 162 | 102 | 180 | 110 | 108 |
| 150 | 117 | 171 | 114 | 97 |
| 154 | 105 | 165 | 107 | 102 |
| 152 | 114 | 165 | 109 | 96 |
| 150 | 107 | 159 | 106 | 99 |

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## WINTER SCHOOL

| C.A. (Months) | I.Q. | E.A. (Months) | E.Q. | A.R. |
|---|---|---|---|---|
| 168 | 96 | 159 | 95 | 99 |
| 153 | 106 | 157 | 103 | 97 |
| 163 | 116 | 157 | 96 | 83 |
| 185 | 90 | 154 | 83 | 92 |
| 154 | 112 | 154 | 100 | 89 |
| 176 | 107 | 154 | 87 | 81 |
| 151 | 122 | 154 | 102 | 84 |
| 150 | 112 | 152 | 101 | 90 |
| 162 | 113 | 152 | 94 | 83 |
| 158 | 99 | 152 | 96 | 97 |
| 156 | 101 | 149 | 96 | 95 |
| 153 | 99 | 149 | 97 | 98 |
| 174 | 100 | 146 | 84 | 84 |
| 161 | 95 | 146 | 91 | 95 |
| 144 | 107 | 146 | 101 | 94 |
| 156 | 113 | 146 | 94 | 83 |
| 156 | 88 | 144 | 92 | 105 |
| 154 | 114 | 142 | 92 | 81 |
| 173 | 95 | 142 | 82 | 86 |
| 158 | 102 | 142 | 90 | 88 |
| 156 | 102 | 142 | 91 | 89 |

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WINTER SCHOOL

| C.A. (Months) | I.Q. | E.A. (Months) | E.Q. | A.R. |
|---|---|---|---|---|
| 158 | 101 | 139 | 88 | 87 |
| 166 | 102 | 139 | 84 | 82 |
| 155 | 106 | 137 | 88 | 83 |
| 167 | 99 | 132 | 79 | 80 |
| 153 | 105 | 143 | 93 | 89 |
| 173 | 73 | 142 | 76 | 104 |
| 156 | 100 | 130 | 83 | 83 |
| 169 | 97 | 157 | 93 | 96 |
| 171 | 105 | 154 | 90 | 86 |
| 159 | 121 | 184 | 116 | 96 |
| 154 | 110 | 174 | 113 | 103 |
| 162 | 108 | 139 | 86 | 80 |
| 165 | 104 | 137 | 83 | 80 |
| 162 | 89 | 135 | 83 | 93 |
| 159 | 99 | 135 | 85 | 86 |
| 156 | 100 | 135 | 87 | 87 |
| 143 | 90 | 135 | 94 | 104 |
| 167 | 82 | 135 | 81 | 99 |
| 196 | 84 | 135 | 68 | 81 |
| 160 | 98 | 135 | 84 | 86 |
| 198 | 90 | 132 | 68 | 76 |

## WINTER SCHOOL

| C.A. (Months) | I.Q. | E.A. (Months) | E.Q. | A.R. |
|---|---|---|---|---|
| 176 | 79 | 132 | 75 | 95 |
| 169 | 82 | 131 | 83 | 100 |
| 172 | 88 | 131 | 76 | 86 |
| 153 | 92 | 130 | 85 | 92 |
| 159 | 70 | 130 | 92 | 130 |
| 176 | 87 | 130 | 74 | 85 |
| 157 | 86 | 128 | 81 | 94 |
| 162 | 79 | 128 | 79 | 100 |
| 162 | 98 | 128 | 79 | 81 |
| 170 | 79 | 128 | 75 | 95 |
| 165 | 100 | 128 | 78 | 78 |
| 161 | 101 | 126 | 78 | 77 |
| 153 | 91 | 126 | 82 | 90 |
| 151 | 95 | 126 | 83 | 87 |
| 187 | 82 | 125 | 67 | 82 |
| 163 | 84 | 125 | 77 | 92 |
| 170 | 93 | 125 | 74 | 80 |
| 156 | 71 | 123 | 79 | 111 |
| 212 | 67 | 123 | 55 | 82 |
| 162 | 90 | 122 | 75 | 83 |
| 161 | 70 | 119 | 74 | 106 |

## WINTER SCHOOL

| C.A. (Months) | I.Q. | E.A. (Months) | E.Q. | A.R. |
|---|---|---|---|---|
| 194 | 61 | 117 | 60 | 98 |
| 215 | 49 | 117 | 54 | 110 |
| 144 | 117 | 162 | 113 | 97 |
| 151 | 98 | 162 | 107 | 109 |
| 149 | 117 | 162 | 109 | 93 |
| 158 | 127 | 162 | 103 | 81 |
| 156 | 104 | 157 | 101 | 97 |
| 162 | 106 | 157 | 97 | 92 |
| 168 | 100 | 157 | 93 | 93 |
| 169 | 109 | 157 | 93 | 85 |
| 146 | 90 | 157 | 108 | 120 |
| 149 | 104 | 157 | 105 | 101 |
| 143 | 110 | 154 | 108 | 98 |
| 155 | 103 | 154 | 99 | 96 |
| 163 | 111 | 154 | 94 | 85 |
| 153 | 110 | 152 | 99 | 90 |
| 155 | 92 | 152 | 98 | 106 |
| 179 | 95 | 152 | 85 | 89 |
| 163 | 112 | 149 | 91 | 81 |
| 159 | 102 | 149 | 94 | 92 |
| 178 | 100 | 149 | 85 | 85 |

## WINTER SCHOOL

| C.A. (Months) | I.Q. | E.A. (Months) | E.Q. | A.R. |
|---|---|---|---|---|
| 161 | 101 | 149 | 93 | 92 |
| 151 | 99 | 146 | 97 | 98 |
| 151 | 109 | 146 | 97 | 89 |
| 166 | 101 | 146 | 88 | 87 |
| 176 | 90 | 146 | 83 | 92 |
| 154 | 109 | 146 | 95 | 87 |
| 156 | 80 | 144 | 92 | 102 |
| 186 | 81 | 142 | 76 | 94 |
| 157 | 100 | 142 | 90 | 90 |
| 168 | 104 | 142 | 85 | 81 |
| 164 | 80 | 139 | 85 | 106 |
| 161 | 82 | 139 | 87 | 106 |
| 172 | 87 | 135 | 78 | 90 |
| 163 | 91 | 135 | 83 | 91 |
| 149 | 90 | 132 | 89 | 99 |
| 161 | 75 | 128 | 78 | 104 |

## STRAWBERRY SCHOOL

| C.A. (Months) | I.Q. | E.A. (Months) | E.Q. | A.R. |
|---|---|---|---|---|
| 179 | 61 | 120 | 61 | 100 |
| 177 | 88 | 144 | 81 | 92 |
| 157 | 94 | 135 | 86 | 91 |
| 192 | 65 | 137 | 66 | 101 |
| 170 | 84 | 137 | 81 | 98 |
| 179 | 78 | 125 | 70 | 90 |
| 149 | 75 | 133 | 89 | 119 |
| 149 | 93 | 142 | 95 | 102 |
| 156 | 85 | 135 | 87 | 103 |
| 139 | 98 | 168 | 121 | 124 |
| 155 | 79 | 123 | 79 | 100 |
| 165 | 89 | 156 | 94 | 106 |
| 166 | 85 | 139 | 84 | 99 |
| 158 | 81 | 132 | 83 | 102 |
| 193 | 59 | 126 | 65 | 110 |
| 172 | 90 | 137 | 68 | 75 |
| 182 | 82 | 168 | 92 | 112 |
| 156 | 104 | 152 | 97 | 93 |
| 149 | 97 | 139 | 93 | 96 |
| 169 | 72 | 137 | 81 | 112 |
| 162 | 98 | 191 | 117 | 119 |

## [illegible]

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| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

## STRAWBERRY SCHOOL

| C.A. (Months) | I.Q. | E.A. (Months) | E.Q. | A.R. |
|---|---|---|---|---|
| 156 | 85 | 133 | 85 | 100 |
| 153 | 96 | 159 | 104 | 108 |
| 177 | 79 | 135 | 76 | 96 |
| 162 | 92 | 142 | 88 | 96 |
| 150 | 98 | 142 | 95 | 97 |
| 157 | 89 | 139 | 89 | 100 |
| 179 | 90 | 179 | 100 | 111 |
| 146 | 108 | 163 | 112 | 104 |
| 192 | 65 | 121 | 63 | 95 |
| 177 | 102 | 130 | 75 | 73 |
| 183 | 76 | 142 | 78 | 103 |
| 153 | 92 | 137 | 89 | 97 |
| 150 | 99 | 139 | 93 | 94 |
| 159 | 120 | 180 | 113 | 94 |
| 149 | 110 | 156 | 105 | 95 |
| 165 | 85 | 137 | 83 | 87 |
| 153 | 81 | 137 | 89 | 109 |
| 168 | 74 | 132 | 79 | 107 |
| 167 | 85 | 130 | 78 | 92 |
| 194 | 68 | 125 | 64 | 93 |
| 165 | 85 | 120 | 73 | 86 |

## STRAWBERRY SCHOOL

| C.A. (Months) | I.Q. | E.A. (Months) | E.Q. | A.R. |
|---|---|---|---|---|
| 178 | 80 | 128 | 72 | 90 |
| 142 | 144 | 192 | 135 | 94 |
| 151 | 132 | 173 | 114 | 86 |
| 144 | 128 | 149 | 103 | 80 |
| 158 | 114 | 149 | 94 | 82 |
| 151 | 113 | 177 | 117 | 103 |
| 153 | 112 | 183 | 113 | 101 |
| 154 | 106 | 179 | 117 | 110 |
| 155 | 90 | 135 | 87 | 97 |
| 174 | 63 | 128 | 74 | 117 |
| 179 | 75 | 133 | 74 | 99 |
| 161 | 100 | 171 | 106 | 106 |
| 153 | 108 | 187 | 123 | 114 |
| 177 | 69 | 125 | 71 | 103 |
| 157 | 89 | 137 | 87 | 98 |
| 167 | 81 | 130 | 78 | 96 |
| 173 | 84 | 144 | 83 | 99 |
| 173 | 92 | 180 | 104 | 113 |
| 184 | 77 | 120 | 65 | 86 |
| 169 | 85 | 133 | 79 | 93 |
| 175 | 75 | 168 | 96 | 127 |

## STRAWBERRY SCHOOL

| C.A. (Months) | I.Q. | E.A. (Months) | E.Q. | A.R. |
|---|---|---|---|---|
| 175 | 81 | 139 | 79 | 98 |
| 175 | 95 | 175 | 100 | 105 |
| 185 | 89 | 152 | 82 | 92 |
| 178 | 80 | 177 | 99 | 123 |
| 162 | 122 | 133 | 82 | 67 |
| 170 | 94 | 175 | 103 | 109 |
| 161 | 92 | 135 | 84 | 91 |
| 160 | 82 | 142 | 89 | 108 |
| 157 | 95 | 156 | 99 | 104 |
| 183 | 85 | 139 | 76 | 89 |
| 157 | 104 | 174 | 110 | 106 |
| 172 | 75 | 130 | 76 | 101 |
| 161 | 100 | 170 | 106 | 106 |
| 150 | 99 | 152 | 101 | 102 |
| 158 | 101 | 149 | 94 | 93 |
| 163 | 96 | 192 | 118 | 123 |
| 155 | 102 | 152 | 98 | 96 |
| 168 | 94 | 152 | 90 | 96 |
| 166 | 94 | 144 | 87 | 92 |
| 158 | 99 | 175 | 111 | 112 |
| 178 | 83 | 133 | 75 | 90 |

[illegible]

| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
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| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

## STRAWBERRY SCHOOL

| C.A. (Months) | I.Q. | E.A. (Months) | E.Q. | A.R. |
|---|---|---|---|---|
| 151 | 96 | 149 | 99 | 103 |
| 163 | 88 | 142 | 87 | 99 |
| 169 | 83 | 137 | 81 | 97 |
| 159 | 90 | 135 | 85 | 94 |
| 169 | 83 | 128 | 70 | 84 |
| 161 | 90 | 142 | 88 | 98 |
| 193 | 67 | 120 | 62 | 92 |
| 189 | 64 | 130 | 69 | 108 |
| 157 | 123 | 165 | 105 | 85 |
| 153 | 118 | 149 | 97 | 82 |
| 188 | 62 | 117 | 62 | 100 |
| 153 | 97 | 135 | 88 | 91 |
| 158 | 100 | 126 | 80 | 80 |
| 165 | 104 | 179 | 108 | 104 |
| 155 | 94 | 147 | 95 | 101 |
| 224 | 87 | 142 | 63 | 72 |

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